Lightwave Logic Announces Controlled Availability of Silicon Photonics Process Design Kit for Advanced Electro-Optic Polymer Integration

Management team to attend the Optical Fiber Conference in San Francisco

DENVER, COLORADO / ACCESS Newswire / March 28, 2025 / Lightwave Logic, Inc. (NASDAQ:LWLG) (the "Company"), a technology platform company leveraging its proprietary electro-optic (EO) polymers to transmit data at higher speeds with less power, today announced the controlled availability of its cutting-edge Process Design Kit (PDK). This PDK enables the integration of the Company's advanced EO polymers into Silicon Photonic Integrated Circuits (Si-PICs) using Lightwave Logic's novel Back-End-of-Line (BEOL) process.

Despite the significant advancements in silicon photonics, scaling up to data rates of 200Gbps and 400Gbps presents inherent challenges. Traditional silicon photonics-based modulators face bandwidth limitations due to their reliance on charge-carrier effects, leading to increased power consumption and signal degradation at higher speeds. As data center and AI-driven networking demands continue to push for greater bandwidth efficiency, alternative materials such as EO polymers are poised to play a disruptive role in overcoming these bottlenecks. Polymers offer ultra-fast response times, low power consumption, and high electro-optic coefficients, making them a compelling solution to enhance the performance of silicon photonics beyond its conventional limits.

Consistent with its mission to augment silicon photonics performance to meet the stringent bandwidth and power consumption needs of artificial intelligence and networking applications across multiple generations, Lightwave Logic's groundbreaking BEOL process encompasses key steps including EO polymer application, patterning and etching, Atomic Layer Deposition (ALD) encapsulation, EO polymer poling, contact pad opening, chip dicing, and end face creation and polishing. Crucially, the BEOL process is designed for compatibility with existing semiconductor fabrication lines, facilitating seamless integration with silicon photonic device manufacturing flows. This process offers flexibility, applicable at both wafer and chip levels up to the dicing stage.

This advancement marks a significant step forward in the development of high-performance devices capable of 3.2 Tbps and beyond while preserving silicon photonics' unique cost and scalability advantages compared to alternatives such as thin-film lithium niobate or indium phosphide, which is crucial to the future of the industry.

"Our cutting-edge PDK represents a pivotal development in integrating our advanced EO polymers with silicon photonics," said Yves LeMaitre, Chief Executive Officer of Lightwave Logic. "By offering a BEOL process compatible with existing semiconductor fabrication lines, we enable our partners to seamlessly enhance their silicon photonic devices, meeting the ever-increasing demands for higher bandwidth and lower power consumption in AI and networking applications."

This PDK has already been implemented as part of collaborative efforts with two semiconductor foundries. These demonstrations highlight the PDK's potential to accelerate the commercialization of EO polymer-enabled silicon photonic devices, reinforcing Lightwave Logic's leadership in next-generation optical technologies.

In addition, Lightwave Logic will attend the 2025 Optical Fiber Conference, the premier global event for optical networking and communications, from March 30 through April 3, at the Moscone Center in San Francisco, CA.

Management has arranged a private meeting room on the showroom floor. Parties interested in scheduling a meeting may contact Atikem Haile, Lightwave Logic's VP of Marketing and Business Development, at

atikem.haile@lightwavelogic.com.

For more information about Lightwave Logic and its technologies, please visit the company's website at www.lightwavelogic.com.

About Lightwave Logic, Inc.

Lightwave Logic, Inc. (NASDAQ:LWLG) www.lightwavelogic.com is a technology platform company leveraging its proprietary engineered electro-optic (EO) polymers to transmit data at higher speeds with less power in a small form factor. The Company's high activity and high stability organic polymers allow it to create next-generation photonic EO devices that convert data from electrical signals into light/optical signals for applications in telecommunications, and for data transmission potentially used to support generative AI.

Safe Harbor Statement

The information posted in this release may contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. You can identify these statements by use of the words "may," "will," "should," "plans," "explores," "expects," "anticipates," "continue," "estimate," "project," "intend," and similar expressions. Forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from those projected or anticipated. These risks and uncertainties include, but are not limited to, lack of available funding; general economic and business conditions; competition from third parties; intellectual property rights of third parties; regulatory constraints; changes in technology and methods of marketing; delays in completing various engineering and manufacturing programs; changes in customer order patterns; changes in product mix; success in technological advances and delivering technological innovations; shortages in components; production delays due to performance quality issues with outsourced components; those events and factors described by us in Item 1.A "Risk Factors" in our most recent Form 10-K and 10-Q; other risks to which our company is subject; other factors beyond the company's control.

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